UCRL-JC-126234 Abs

A System for Securely Monitoring a Nationwide Client-Server Information System over the Internet

Ken Masica
Lawrence Livermore Laboratory

The Department of Energy (DOE) Integrated Safeguards and Security System (DISS) is a nationwide, secure client-server information system that allows authorized DOE personnel to electronically view, process, and transmit security clearance information. The DISS system architecture is based on encrypted communication over the Internet between PC client machines that provide the application interface, and back-end UNIX relational database servers that are protected by application firewalls. The current DISS network consists of twelve (12) regional database servers deployed across the DOE complex and hundreds of PC clients. This paper describes a secure, automated monitoring system that was developed to proactively manage the geographically dispersed collection of hardware, software, and networking resources that comprise the DISS distributed system. The DISS Secure Monitoring System (DSMS) uses secure virtual channels over the Internet for communication between a central management station and the remotely installed equipment. The Simple Network Management Protocol (SNMP) is the monitoring protocol used by the management station to monitor the deployed collection of routers, firewalls, server systems, and relational database software. Status information is collected automatically at regular polling intervals and is delivered to a graphical representation of the DISS network running on the managment station. The management station processes alarm conditions, generates reports, notifies personnel, and logs problems in real-time. Tools for tracing network connectivity problems, logging into remote systems securely, and conducting system security scans of deployed equipment are also part of the management station environment.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.